In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method for ~~stimulating~~ enhancing the level of an immune response to a vaccine against an infectious agent ~~applied to~~ in a mammalian subject comprising ~~the step of~~ administering to the subject an effective amount of the B subunit of E. Coli. heat labile enterotoxin (EtxB), wherein the EtxB is ~~or a molecule having substantially equivalent activity,~~ free from whole toxin and not linked to an antigen.

2. (Canceled)

3. (Previously amended) A method according to claim 1, wherein the vaccine is one for an infectious agent which is a member of the herpes virus family.

4. (Previously amended) A method according to claim 3, wherein the vaccine is one for an infectious agent ~~is~~ selected from the group consisting of HSV-1, HSV-2, EBV, VZV, CMV, HHV-6, HHV-7 and HHV-8.

5. (Previously amended) A method according to claim 4, wherein the vaccine is one for an infectious agent ~~is~~ selected from the group consisting of HSV-1, HSV-2, CMV and EBV.

6. (Withdrawn) A method according to claim 1, wherein the infectious disease is caused by an infectious agent, and the infectious agent is an influenza virus.

7. (Withdrawn) A method according to claim 1, wherein the infectious disease is caused by an infectious agent, and the infectious agent is a parainfluenza virus.

8. (Withdrawn) A method according to claim 1, wherein the infectious disease is caused by an infectious agent, and the infectious agent is a respiratory syncytial virus.

9. (Withdrawn) A method according to claim 1, wherein the infectious disease is caused by an infectious agent, and the infectious agent is a hepatitis virus.

10. (Withdrawn) A method according to claim 9, wherein the infectious agent is selected from the group consisting of hepatitis A, B, C and D viruses.

11. (Withdrawn) A method according to claim 10, wherein the infectious agent is a hepatitis A virus or a hepatitis C virus.

12. (Withdrawn) A method according to claim 1, wherein the infectious disease is meningitis.

13. (Withdrawn) A method according to claim 12, wherein the infectious disease is caused by an infectious agent, and the infectious agent is selected form the group consisting of Neisseria meningitidis, Haemophilus influenzae type B and Streptococcus pneumoniae.

14. (Withdrawn) A method according to claim 1, wherein the infectious disease is pneumonia or a respiratory tract infection.

15. (Withdrawn) A method according to claim 14, wherein the infectious disease is caused by an infectious agent, and the infectious agent is selected from the group consisting of Streptococcus pneumoniae, Legonella pneumophila and Mycobacterium tuberculosis.

16. (Withdrawn) A method according to claim 1, wherein the infectious disease is a sexually-transmitted disease.

17. (Withdrawn) A method according to claim 16, wherein the infectious disease is caused by an infectious agent, and the infectious agent is selected from the group consisting of Neisseria gonnorheae, HIV-1, HIV-2 and
Chlamydia trachomatis.

18. (Withdrawn) A method according to claim 1, wherein the infectious disease is a gastrointestinal disease.

19. (Withdrawn) A method according to claim 18, wherein the infectious disease is caused by an infectious agent, and the infectious agent is selected from the group consisting of enteropathogenic, enterotoxigenic, enteroinvasive, enterohaemorrhagic and enteroaggregative E. coli, rotavirus, Salmonella enteritidis, Salmonella typhi, Helicobacter pylori, Bacillus cereus, Campylobacter jejuni and Vibrio cholerae.

20. (Withdrawn) A method according to claim 1, wherein the infectious disease is a superficial infection.

21. (Withdrawn) A method according to claim 20, wherein the infectious disease is caused by an infectious agent, and the infectious agent is selected from the group consisting of Staphylococcus aureus, Streptococcus pyogenes and Streptococcus mutans.

22. (Withdrawn) A method according to claim 1, wherein the infectious disease is a parasitic disease.

23. (Withdrawn) A method according to claim 22, wherein the infectious disease is

caused by an infectious agent, and the infectious agent is selected from the group consisting of malaria, Trypanasoma spp., Toxoplasma gondii, Leishmania donovani and Oncocerca spp.

24. (Withdrawn) A vaccine composition for use against an infectious disease, which infectious disease is caused by an infectious agent, wherein the vaccine composition comprises an antigenic determinant and an immunomodulator selected from:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; or

(iii) an agent having an effect on intracellular signalling events mediated by GM1-binding or Gb3 binding;

wherein said antigenic determinant is an antigenic determinant of said infectious agent.

25. (Withdrawn) A vaccine composition according to claim 24 in which the infectious disease is HSV-1 infection and wherein the antigenic determinant is an antigenic determinant of HSV-1.

26. (Withdrawn) A vaccine composition according to claim 24 or 25 in which the immunomodulator is EtxB free from whole toxin.

27. (Withdrawn) A vaccine composition according to claim 24, 25 or 26 in which the immunomodulator and the antigenic determinant are separate moieties.

28. (Withdrawn) A vaccine composition according to claim 24, 25 or 26 in which the immunomodulator and the antigenic determinant are linked by a bifunctional crosslinking reagent.

29. (Withdrawn) A kit for vaccination of a mammalian subject against an infectious disease, which kit comprises:

a) one of the following agents:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; or

(iii) an agent having an effect on intracellular signalling events mediated by GM1-binding or Gb3 binding; and

b) an antigenic determinant which is an antigenic determinant of the infectious disease, for coadministration with the said vaccine immunomodulator.

30. (Withdrawn) A method of preventing or treating a disease in a host, which method comprises the step of inoculating said host with a vaccine comprising at least one antigenic determinant and an immunomodulator, where the immunomodulator is:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; or

(iii) an agent having an effect on intracellular signalling events mediated by GM1-binding or Gb3 binding.

31. (Withdrawn) A method for upgrading the production of antibodies at mucosal surfaces in a mammalian subject comprising administering to the subject an effective amount of an immunomodulator selected from the group consisting of:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; and

(iii) an agent having an effect on intracellular signalling events mediated by GM1-binding or Gb3 binding.

32. (Withdrawn) A method for prolonging antigen presentation of, and giving sustained immunological memory to, a vaccine in a mammalian subject comprising administering to the subject an immunomodulator selected from the group consisting of:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; and

(iii) an agent having an effect on intracellular signalling events mediated by GM1-binding or Gb3 binding.

33. (Withdrawn) A vaccine composition for use against an infectious disease, which infectious disease is caused by an infectious agent, which vaccine comprises an antigenic determinant and a immunomodulator selected from the group consisting of:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; and

(iii) an agent having an effect on intracellular signalling events mediated by GM1-binding or Gb3 binding;

wherein said antigenic determinant is an antigenic determinant of said infectious agent and wherein the immunomodulator prolongs presentation of the antigenic determinant and gives sustained immunological memory.

34. (Withdrawn) A method for targeting delivery of a vaccine antigen or antigenic determinant to the cytosol or nucleus of an antigen-presenting cell upon administration of the vaccine to a mammalian subject comprising administrating to the subject a conjugate comprising:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; or

(iii) an agent which has an effect on vesicular internalisation mediated by

GM1-binding or Gb3 binding;

and said antigen or antigenic determinant.

35. (Withdrawn) A method for upregulating the presentation of an antigen or antigenic determinant by MHC class I molecules upon administration of the antigen or antigenic determinant to a mammalian subject comprising administering to the subject an effective amount of a conjugate with antigen or antigenic determinant and an immunomodulator selected from the group consisting of:

(i) EtxB, CtxB or VtxB free from whole toxin;

(ii) an agent other than EtxB or CtxB, having GM1-binding activity, or an agent other than VtxB having Gb3-binding activity; and

(iii) an agent which has an effect on vesicular internalisation mediated by GM1-binding or Gb3 binding.

36. (Withdrawn) A vaccine composition which comprises:

a) EtxB, CtxB, or an agent other than EtxB or CtxB which has GM1-binding activity; and

b) an EBV antigen

for use in the treatment and/or prevention of EBV associated diseases.

37. (Withdrawn) A therapeutic composition which comprises:

EtxB, CtxB or an agent other than EtxB or CtxB

which hasGM1-binding activity

for use in the treatment of EBV-associated diseases.